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NOTES ON SOUTH AFRICAN MARINE ALGAE. II.[1]

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Chlorophyceae.

Cladophora radiosa (Suhr) Kützing, Sp. alg. : 422, 1849. *Conferva radiosa* Suhr, Flora, 17 : 741, 1834. *Cladophora catenifera* Kützing, Sp. alg. : 390, 1849 ; Tab. phyc., 3 : 24, pl. 83, fig. 1, 1853.

An examination of one of the original specimens of *Conferva radiosa* Suhr (1834) from Algoa Bay (in Mus. Botan. Stockholm) has shown that this little-known species is identical with the plant that was described by Kützing in 1849 and figured in 1853 as *Cladophora catenifera*. The type of *C. catenifera* was sent to Kützing by Harvey under the name *Conferva pellucida*. The writer has not had the opportunity of examining this specimen but has seen a duplicate (in Mus. Botan. Stockholm) that was sent to Areschoug by Harvey under the same name. Areschoug's specimen agrees well with Kützing's (1853) figure of *Cladophora catenifera* and with the specimen of *Conferva radiosa* referred to above.

Barton (Journ. Bot. 1896, p. 193) has pointed out that *Conferva radiosa* Suhr and *Cladophora catenifera* Kütz. are co-specific but she adopted the specific name *catenifera*. The epithet *radiosa* has priority, however. Kützing made the combination *Cladophora radiosa* without apparently having seen the species.

Cladophora rugulosa Martens, Die Tange : 112, pl. 2, fig. 3, 1866. *Apjohnia rugulosa* (Mart.) G. Murray, Trans. Linn. Soc. London, Ser. 2, Bot., 3 : 209, pl. 52, fig. 5, 1891.

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[1] The first paper in this series appeared in Botaniska Notiser, 1940, pp. 200—226. The work was assisted by a grant from the Carnegie Corporation of New York through the University of Cape Town.

Several authors (Krauss, Flora 1846, p. 215 ; Areschoug, Phyc. Cap. 1851, p. 12 ; Levring, Lunds Univ. Arsskr. N.F., Avd. 2, 34(9), 1938, p. 11) have referred plants of this species to *Cladophora prolifera*, but a comparison of the South African plant with material of *C. prolifera* (in Herb. Agardh) from the Adriatic has shown that the two species are not identical. In *C. rugulosa* the cells are considerably longer, the annular constrictions in the cells more pronounced, the main axes more prominent, and the whorls of short and long branches more obvious.

The writer has not had the opportunity of examining the type of *C. rugulosa*, but since only one species of *Cladophora* having annular constrictions in the cells occurs in South Africa there need be no doubt regarding the identity of *C. rugulosa*. Martens received his specimen from Krauss, who had listed (Krauss, l.c.) and distributed the plant under the name *Conferva prolifera*. Martens does not cite the record of Krauss, but the writer has seen six of Krauss' specimens (one in Herb. Inst. Allg. Bot. Hamburg, two in Herb. Agardh, and three in Herb. Areschoug in Mus. Botan. Stockholm) and found all of them to be *C. rugulosa*.

It is to be noted that Martens referred to *C. rugulosa* specimens from South Africa (Port Natal) and Japan (Yokohama), without specifying the type locality. From his account it is obvious, however, that Martens had assigned the name *Cladophora rugulosa* in manuscript form to the plant from Port Natal prior to the receipt of the material from Japan. This circumstance and the fact that Port Natal is the first locality cited by Martens indicate that South Africa should be regarded as the type locality of *C. rugulosa*.

An examination of a specimen (in Mus. Botan. Stockholm) of the plant that Drège (Zwei. Pfl. Dok, 1843, pp. 157, 174) listed under the name *Conferva trichotoma* has shown it to be *Cladophora rugulosa*. Areschoug (Phyc. Cap. 1851, p. 13) and Barton (Journ. Bot. 1893, p. 55) accepted Drège's record of *Cladophora trichotoma*.

Bryopsis setacea Hering, Ann. and Mag. Nat. Hist., 8 : 91, 1841 ; Krauss, Flora, 29 : 214, 1846 ; Barton, Journ. Bot., 33 : 161, pl. 349, figs. 3, 4, 1895 ; *Ibid.*, 34 : 458, 1896. *Bryopsis myosuroides* Kützing, Tab. phyc., 6 : 27, pl. 77, fig. 1, 1856 ; Levring, Lunds Univ. Arsskr., N.F., Avd. 2, 34(9) : 13, fig. 6E—G, pl. 3, fig. 6, 1938.

As has been pointed out by Barton (Journ. Bot. 1895, p. 161 ; 1896, p. 458), *Bryopsis myosuroides* Kützing (1856) is synonymous with *B. setacea* Hering (1841). The writer has been fortunate in being able to examine an original specimen of *B. setacea* (in Herb. Inst. allg. Bot. Hamburg) which was collected by Krauss at Port Natal Point, the type locality. The specimen is accompanied by a pencil figure marked

" *Bryopsis setacea* Hering," and its label contains the following inscription in Krauss' writing : " *Bryopsis Balbisiana* Ag., Port Natal Point, Juni 1839, N. 13."

Since Krauss (1846) records but one species of *Bryopsis*, *B. setacea* Hering, from South Africa (Port Natal Point) and since Hering founded this species on material collected by Krauss at Port Natal Point, it may be taken as certain that the plant that Krauss had named *B. Balbisiana* in his herbarium actually represents *B. setacea* Hering.

The writer has not yet had the opportunity of examining the type of *B. myosuroides* Kützing, the source of which likewise is Port Natal, but the specimen of *B. setacea* referred to above agrees well with Kützing's figures of *B. myosuroides*. The plant is common along the east coast of South Africa. Barton (Journ. Bot., 1895, p. 161) has designated as lectotype of *B. setacea* the specimen, Krauss No. 322, which is preserved in the British Museum.

Caulerpa scalpelliformis (R. Br.) C. Ag. var. **denticulata** (Decsne) Web. v. Bosse, Monogr. d. Caulerpes : 287, pl. 22, fig. 11c-d, pl. 23, figs. 8, 10, 1898. *Caulerpa denticulata* Decaisne, Pl. de l'Arabie : 120, pl. 6, fig. B, 1841.

This plant is here recorded for the first time from South Africa. It was secured at St. Lucia Rocks in St. Lucia Bay. The South African material agrees well with what probably is one of Decaisne's original specimens of this variety that is preserved in Herb. Agardh (No.16439)

C. scalpelliformis var. *denticulata* was also represented by several specimens in a small collection of marine algae from Delagoa Bay (collected by Moe in 1903) that the writer received for determination from Mus. Botan. Stockholm.

Caulerpa tongaensis nom. nov. *Caulerpa filiformis* Harv. ex J.. Agardh, Till alg. syst., 1 : 5, 1872 (not *C. filiformis* (Suhr) Hering, 1841) *Caulerpa Van Bosseae* Papenfuss, Bot. Not., 1940 : 203, 1940 (not *C. Vanbosseae* Setchell et Gardner, Proc. Calif. Acad. Sc.. Ser. 4, 12(29) ; 704, 1924).

The renaming of this species is necessitated by the fact that the binomial *Caulerpa Van Bosseae* Papenfuss (1940) is invalidated by *C. Vanbosseae* Setchell et Gardner (1924). The species is known from the Friendly Islands only. The type specimen is No. 16347 in Herb. Agardh.

Udotea orientalis A. et E. S. Gepp, Codiaceae of the Siboga Exped. : 119, 1911.

As far as is known South Africa contains but one species of *Udotea*. This plant has been referred to *U. Desfontainii* (Barton, Journ. Bot. 1896, p. 193, as *U. Desfontainesii*) and to *U. conglutinata* (Delf and Michell, Ann. Bolus Herb. 1922, p. 95 ; Levring, Lunds Univ. Arsskr.

N.F., Avd. 2. 34(9), 1938, p. 14) but A. and E. S. Gepp (1911) have pointed out that it is *U. orientalis.*

PHAEOPHYCEAE.

Padina plumbea (Aresch.) Levring, Kungl. Fysiogr. Sällskap. Lund Förhandl., 10(20) : 10, fig. 5, 1940. *Zonaria plumbea* Areschoug, Phyc. Cap. : 25, 1851. *Chlanidophora plumbea* (Aresch.) Papenfuss, Bot. Not., 1940 : 204, fig. 5, 1940.

This species was placed in the genus *Chlanidophora* by Papenfuss (1940) but Levring (1940) has shown that it should be referred to *Padina.*

Up to the present the species has been known only from Areschoug's type material. The plant was recently rediscovered, however, at Port Edward, on the Natal coast, by Professor T. A. Stephenson and his co-workers. Unfortunately this material is sterile, and it is not possible to compare the distribution of the reproductive organs on the thallus in *P. plumbea* with that of other distromatic species of *Padina.*

Dictyopteris delicatula. Lamouroux, Nouv. Bull. Sc. Soc. Philom., 1 : 332, pl. 6, fig. 2b, 1809.

This species was reported from South Africa (Natal Bay) by Areschoug (Phyc. Cap. 1851, p. 27). De Toni (Syll. Alg. 1895, p. 253) questions Areschoug's record, but an examination of the latter's specimens has shown that they are *Dictyopteris delicatula.* The writer has also collected the plant along the Natal coast.

Carpomitra filiformis (Suhr) comb. nov. *Chytraphora filiformis* Suhr, Flora, 17 : 721, pl. 1, fig. 1, 1834. *Carpomitra Chytraphora* Kützing, Tab. phyc., 9 : 37, p. 89, fig. II, 1859.

It is necessary to restore the name under which this species was first described by Suhr (1834). The generic name *Chytraphora* Suhr (1834) antedates *Carpomitra* Kützing (1843), but the retention of the latter as a *nomen conservandum* has been sanctioned by the International Botanical Congress.

Desmarestia firma (Ag.) Skottsberg, Wissensch. Ergebn. schwed. Südpolar-Exped., 4(6) : 21, 1907. *Sporochnus herbaceus* var. *firma* Agardh, Syst. alg. : 261, 1824 (in part). *Desmarestia ligulata* var. *firma* J. Agardh. Sp. alg., 1 : 169, 1848. *Desmarestia herbacea* f. *latior* Kützing, Tab. phyc., 9 : 42, pl. 100, 1859.

Considerable confusion exists regarding the identity of the common South African *Desmarestia.* When describing *Sporochnus herbaceus* var. *firma*, C. Agardh (1824) listed specimens from both France and South Africa. J. Agardh (1848), however, assigned only South African plants to this variety. Since the European specimens credited to var. *firma* by C. Agardh probably were representative of *Desmarestia ligulata*, the varietal name *firma* may be considered as applying to the South African plant ; and the specimen (No. 49916 in Herb. Agardh) that was sent to C. Agardh by Delaland may be regarded as the type.

In 1907 Skottsberg raised var. *firma* to specific rank but in a later paper he (K. Sv. Vet.-Akad. Handl. 61(11), 1921, p. 21) reduced it to a synonym of *Desmarestia ligulata*. The writer has no first-hand knowledge of the Antarctic species of *Desmarestia*, on which Skottsberg based his judgment, but the South African plant under consideration is considerably broader and longer than the North Atlantic *D. ligulata*. According to Turner (Fuci 1809, pl. 98) and Harvey (Phyc. Brit. 1846, pl. 115), *D. ligulata* may grow to a length of 2—6 ft. The writer has obtained specimens of *D. firma* that were over 10 ft. long and 4½ ins. wide at the broadest parts.

D. firma seems to be closely related to *D. herbacea*, from the Pacific coast of North America, but since the two plants occur in widely separated regions it seems best to retain them as distinct species.

Desmarestia aculeata (L.) Lamour. This species was reported from South Africa by Barton (Journ. Bot. 1893, p. 111). The specimen upon which the record is based is in Herb. Mus. Brit. and at one time was in Herb. Shuttleworth. It is labelled in the hand of Harvey "*Hypnea spicigera* C.B.S.—W.H.H.," and an accompanying notation in Mr. A. Gepp's writing reads "Probably label exchanged in Hb. Shuttleworth."

The specimen actually is *Desmarestia aculeata* but the writer concurs with the opinion of Mr. Gepp that an exchange of labels had occurred. It is unlikely that Harvey would have mistaken *Hypnea spicifera*,[2] which is very common in South Africa, for *Desmarestia aculeata*. Accordingly, *D. aculeata* may safely be omitted from the flora of South Africa.

Colpomenia sinuosa (Roth) Derbès et Solier, *in* Castagne, Suppl. au cat. d. pl. qui croiss. nat. env. Marseille : 95, 1851. *Ulva sinuosa* Roth, Cat. bot., 3 : 327, pl. 12, 1806.

An examination of the specimen (No. 14 in Exped. Novara collection in Herb. Naturhist. Mus. Vienna) upon which Grunow (Alg. Novara 1867, p. 49) founded his South African record of *Hydroclathrus clathratus* (as *Asperococcus clathratus*) has shown it to be *Colpomenia sinuosa*. Barton (Journ. Bot. 1893, p. 112) included Grunow's record in her list of South African algae, without, however, having seen his specimen.

Thus far *Hydroclathrus* is not known to occur in South Africa, although it may be expected to be present along the Natal coast.

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[2] The species (as *Hypnea spicigera*) was illustrated by Harvey in his Nereis australis (pl. 49).

Hormophysa triquetra (L.) Kützing, Phyc. gen. : 359, 1843. *Fucus triqueter* Linnaeus, Mant. plant., 2 : 312, 1771 ; Turner, Fuci, 1 : 72, pl. 34, 1808. *Cystoseira triquetra* (L.) C. Agardh. Sp. alg., 1(1) : 61, 1820 ; Syst. alg. : 284, 1824 ; J. Agardh, Sp. alg., 1 : 215, 1848 ; De Toni, Syll. alg., 3 : 176, 1895.

All reports of the occurrence of this species in South Africa are based upon Linnaeus' (1771) type specimen, which was collected by König in " Mari Capensi " during the latter's voyage to India. Since *Hormophysa triquetra* has not been collected again in South Africa, it seems likely that an exchange of labels had occurred and that König actually had obtained his specimen in India, where the species is known to occur. Accordingly, it is suggested that *H. triquetra* be excluded from the flora of South Africa.

Barton (Journ. Bot. 1893, p. 83) cites Bory as an additional authority for the presence of this plant in South Africa, but the latter author (in Duperrey, Voy. la Coquille, 1828, p. 132) merely states, " On l'a retrouvée, dit-on, au cap de Bonne-Espérance."

Cystoseira ericoides J. Ag. This species was reported from South Africa by Barton (Journ. Bot. 1893, p. 83). The specimen upon which the record is based is in Herb. Mus. Brit. It is labelled " *Halerica* Cap Agulhas, C. b. Sp." in a hand unknown to the writer and was identified by Barton as " *Cystoseira ericoides* J. Ag." In addition the label bears the inscription " R. F. Hohenacker " in what seems to be Barton's writing.

It is to be noted that this plant was not included in Hohenacker's *Algae marinae siccatae*. The specimen is a fragment (less than 2 cm. long) of a Phaeophycean alga. It does not resemble any of the specimens of *Cystoseira ericoides* that are in Herb. Agardh nor any South African marine alga known to the writer. Accordingly, it seems best to exclude *C. ericoides* from the marine flora of South Africa.

Rhodophyceae.

Helminthora divaricata (Ag.) J. Ag. This species was recorded from South Africa by Barton (Journ. Bot. 1893, p. 144). An examination of the specimen (in Herb. Mus. Brit.) upon which the record is founded has shown it to be a *Helminthora* ; and its habit suggests that it is *H. divaricata*. The specimen is marked as coming from " C. G. Hope," but the collector's name is not given. It is extremely doubtful, however, that South Africa was the source of the specimen, and in the writer's opinion *H. divaricata* should be excluded from the South African marine flora.

Callophyllis fastigiata (J. Ag.) J. Ag. This species was recorded from South Africa by Barton (Journ. Bot. 1893, p. 141). The specimen (in Herb. Mus. Brit.) upon which the record is based is marked as coming from " Cap Agulhas, C. b. Sp." and it is credited (with a query) to " R. F. Hohenacker."[3] A comparison of the specimen with the type of *Callophyllis fastigiata* (No. 25004 in Herb. Agardh) has shown it to be this species.

It is to be noted that the bound sets of Hohenacker's *Algae marinae siccatae* did not contain South African plants of *C. fastigiata*. The specimen in question may have been included, however, as a loose sheet in one of the fascicles of the issue acquired by the British Museum. Since Hohenacker's exsiccata contained three numbers (223, 281, 337) of *C. fastigiata* from the Falkland Islands, the type locality of this species, it seems likely that an exchange of labels had occurred and that the specimen under consideration was obtained in the Falkland Islands. Accordingly, it is suggested that *C. fastigiata* be omitted from the flora of South Africa.

Eucheuma muricatum (Gmel.) Weber-van Bosse, Liste alg. Siboga, Rhodophyceae, 3 : 413, 1928. *Fucus muricatus* Gmelin, Hist. fuc. : 111, pl. 6, fig. 4, 1768. *Eucheuma spinosum* (L.) J. Agardh, Öfv. Kungl. Svenska Vetensk. Akad. Förhandl., 4 : 16, 1847 ; Sp. alg., 2(2) : 626, 1852 ; *Ibid.*, 3(1) : 601, 1876 ; Anal. alg. : 122, 1892 ; De Toni, Syll. alg., 4(1) : 369, 1897. *Fucus spinosus* Linnaeus, Mant. plant., 2 : 313, 1771 ; Turner, Fuci, 1 : 36, pl .18, 1808.

All records of the occurrence of this plant in South Africa are based upon the specimen that constitutes the type of Linnaeus' *Fucus spinosus*. Since *Eucheuma muricatum* has not been collected in South Africa again, it seems probable that an exchange of labels had occurred and that Linnaeus' specimen came from elsewhere.[4] Accordingly, it is suggested that *E. muricatum* be excluded from the flora of South Africa. J. Agardh as early as 1852 questioned South Africa as the source of Linnaeus' specimen. Barton (Journ. Bot. 1893, p. 173) referred to a specimen of *E. muricatum* that had been collected by McMillan in False Bay but later (l.c. 1896, p. 198) pointed out that the record was based on a misidentification.

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[3] The locality name " Cap Agulhas " suggests that this specimen (as well as the one referred to under *Cystoseira ericoides*) at one time may have been in the possession of Hohenacker, who included a number of algae from Cape Agulhas in his *Algae marinae siccatae*. The writer has not been able to ascertain who collected Hohenacker's algae from Cape Agulhas, but it seems likely that it may have been someone connected with the Moravian Mission Station at Elim, which is situated not far from Cape Agulhas. In addition to Hohenacker the only other early collector of marine algae who had material from Cape Agulhas seems to have been Krauss (Flora 1846, p. 214), who listed one species, *Caulerpa filiformis*, from this locality. This record was also given by Hering (Ann. Mag. Nat. Hist. 8, 1841, p. 91), who reported on some of Krauss' algae.

[4] J. Agardh (Sp. Alg. 1852, p. 627) has seen specimens of *E. muricatum* that were collected by König and suggests that Linnaeus' type may have come from the same source. Should this be true the place of origin of the specimen may have been India, where König is known to have collected for Linnaeus.

Hypnea spicifera (Suhr) Harvey, *apud* J. Agardh, Öfv. Kungl. Svenska Vetensk.-Akad. Förhandl., 4 : 14, 1847 ; Ner. austr. : pl. 49, 1847 (as *Hypnea spicigera*). *Gracilaria spicifera* Suhr, Flora, 17 : 731, pl. 2, fig. 14 m—o, 1834. *Hypnea armata* (Ag.) J. Agardh, Sp. alg., 2(2) : 444, 1852 ; De Toni, Syll. alg., 4(2) : 474, 1900. *Sphaerococcus musciformis armatus* C. Agardh, Sp. alg., 1(2) : 328, 1822.

An examination of the original material of *Hypnea armata* (Ag.) J. Ag. (Nos. 33665 and 33666 in Herb. Agardh) has shown that this species is synonymous with *H. spicifera.* The specimens that Barton (Journ. Bot. 1893, p. 173) listed under *H. armata* have not yet been examined.

Caulacanthus divaricatus (Suhr) comb. nov. *Laurencia divaricata* Suhr, Flora, 23 : 265, 1840 ; Kützing, Sp. alg. : 858, 1849 (not *Laurencia divaricata* J. Agardh, Sp. alg. 1863, p. 754).

An examination of one of the original specimens (No. 34144 in Herb. Agardh) of the plant that Suhr (1840) described under the name *Laurencia divaricata* has shown it to be the South African plant that passes under the name *Caulacanthus ustulatus.* The identity of *Laurencia divaricata* Suhr has been obscure since the species was founded. Kützing (1849), without having seen the plant, referred it to "*species perobscurae*", while J. Agardh (1863, p. 770) placed it in "*species exclusae*", pointing out that it was a species of *Caulacanthus.* J. Agardh did not make the transfer, however, and in a later treatment (J. Agardh, l.c. 1876) of *Laurencia* and *Caulacanthus* made no reference to *Laurencia divaricata* Suhr. De Toni (Syll. Alg. 1903, p. 808) followed J. Agardh in referring the plant to "*species exclusae*", while Barton (Journ. Bot. 1893, p. 174), without having seen Suhr's material, included the species in her list of South African algae. The specimens referred to *Caulacanthus ustulatus* by Barton (l.c. 1893, p. 173 ; 1896, p. 198) and Drège (Zwei Pfl. Dok. 1843, pp. 111, 223, as *Sphaerococcus ustulatus*) have not been examined by the writer but they probably belong to *C. divaricatus*, while those listed under *Rhodomela botryocarpa* by Delf and Michell (Ann. Bolus Herb. 1922, p. 114) are *C. divaricatus.*

In habit, *Caulacanthus divaricatus* resembles both the European *C. ustulatus* and the New Zealandian *C. spinellus.* The writer has, however, seen only dried material of the two latter species and was thus not able to make a critical comparison. Future study may prove these three plants to be co-specific, but for the present it seems best to retain them as separate species. If *C. divaricatus* and *C. spinellus* should prove to be identical but distinct from *C. ustulatus*, the binomial *C. divaricatus* will have priority, since *Laurencia divaricata* Suhr (1840) antedates *Rhodomela* ? *spinella* Hooker and Harvey (Lond. J. Bot. 1845, p. 534).

In connection with the binomial *Laurencia divaricata* Suhr, it may be pointed out that this name invalidates *L. divaricata* J. Agardh (Sp. Alg. 1863, p. 754). The latter species has been reduced, however, to a variety of *L. obtusa* by Yamada (Univ. Calif. Publ. Bot. 16(7), 1931, p. 223).

Gracilaria Protea J. Agardh, Sp. alg., 3(4) : 58, 1901. This species is here recorded for the first time from South Africa. Plants collected by the writer at various localities along the Natal coast agree well with J. Agardh's type material of *G. Protea* from Mauritius.

A comparison of the material which Delf and Michell (Ann. Bolus Herb. 1922, p. 108) recorded under the name *Gracilaria dentata* (in Herb. Tyson at Univ. of Cape Town) with the type material of *G. dentata* has shown that the plant in question does not belong to this species but to *G. Protea.*

Mychodea filiformis Kützing, Tab. phyc., 17 : 24, pl. 82, figs. c, d, 1867.

This species was reported from South Africa by Barton (Journ. Bot. 1893, p. 141) under the name "? *Euhymenia filiformis.*" The specimen upon which the record is based is in Herb. Mus. Brit. It is labelled "*Euhymenia filiformis* Kg. in litter. nov. sp. Caput bonae Sp. Wenek." in a hand unknown to the writer, and a notation in Barton's writing reads : "*Mychodea filiformis* Kütz. ? Cape of Good Hope. See Kützing Tab. Phyc. XVII. 82."

In habit and in structure the specimen agrees well with Kützing's figures of *Mychodea filiformis* and it may be assumed that Barton's record of *Euhymenia filiformis* actually does apply to *Mychodea filiformis.* The binomial *Euhymenia filiformis* probably was a manuscript name given by Kützing, but to the writer's knowledge it was not used in a published description.

The specimen under consideration is tetrasporic, having seriately divided sporangia which are dispersed in the outer cortex. The inner tissue of the thallus is composed of branched filaments and indicates that the thallus is constructed according to the fountain type of apical growth. These features suggest that the plant probably is representative of one of the following genera : *Agardhiella*, *Solieria*, or *Sarconema* (cf. Kylin, Lunds Univ. Arsskr. N.F., Avd. 2. 28(8), 1932, pp. 16, 17, 21, for a characterization of these genera).

Since *Mychodea filiformis* has not been found in South Africa again and since the type locality of the species is Antigua, it seems likely that the specimen in question was credited to South Africa in error, and it is suggested, accordingly, that *M. filiformis* be excluded from the flora of South Africa.

Gymnogongrus glomeratus J. Agardh, Öfv. Kungl. Svenska Vetensk.-Akad. Förhandl., 6 : 88, 1849 ; Sp. alg., 2(1) : 322, 1851 (excl. syn. *Chondrus capensis* Kütz.). *Gymnogongrus corymbosus* J. Agardh, Öfv. Kungl. Svenska Vetensk.-Akad. Förhandl., 6 : 88, 1849 ; Sp. alg., 2(1) : 321, 1851.

An examination of the types of *Gymnogongrus corymbosus* J. Ag. and *G. glomeratus* J. Ag. (Nos. 24203 and 24204, respectively, in Herb. Agardh) has shown that these species are synonymous, the former representing merely a more divided state of the latter. Since these two names were first employed by J. Agardh (1849) in the same publication and since the plant is comparatively well known in South Africa as *Gymnogongrus glomeratus*, it is proposed to retain this name in preference to *G. corymbosus*

Gymnogongrus complicatus (Kütz.) comb. nov. ; *Chondrus ? complicatus* Kützing, Sp. alg. : 737, 1849 ; Tab. phyc., 17 : 17, pl. 58, figs. a—d, 1867. *Halymenia furcellata* var. *capensis* C. Agardh, Sp. alg., 1(2) : 214, 1822 ; Syst. alg. : 244, 1824. *Gymnogongrus capensis* (Ag.) J. Agardh, Sp. alg., 2(1) : 324, 1851 ; *Ibid.*, 3(1) : 213, 1876.

This plant is commonly known as *Gymnogongrus capensis*, but the specific epithet *complicatus* has priority and must supplant the former name. The writer has not had the opportunity of examining the type of *Chondrus ? complicatus* but Kützing's figure of the habit of the species leaves no doubt as to its identity. The plant is very common in certain parts of South Africa.

Gigartina scabiosa (Kütz.) comb. nov. *Chondrus scabiosus* Kützing, Tab. phyc., 17 : 19, pl. 63, figs. a, b, 1867. *Gigartina fastigiata* J. Agardh, Öfv. Kungl. Svenska Vetensk.-Akad. Förhandl., 6 : 86, 1849 ; Sp. alg., 2(1) : 276, 1851 (excl. syn. *Chondrus scutellatus* Hering) ; *Ibid.*, 3(1) : 193, 1876 (not *Gigartina fastigiata* Postels et Ruprecht, Illust. Alg. 1840). *Gigartina Chondrus* Areschoug, Phyc. Extra-europ. exsicc. : No. 13, 1850 (*nomen nudum*).

This species was first described by J. Agardh in 1849 under the name *Gigartina fastigiata* but this binomial is invalidated by *Gigartina fastigiata* Postels et Ruprecht (1840). Accordingly, it is necessary to employ the specific name under which the plant was described and figured by Kützing (1867) as *Chondrus scabiosus*. The name *Gigartina Chondrus* under which the species was distributed by Areschoug (1850) is a *nomen nudum* while *Sphaerococcus* (*Chondrus*) *scutellatus* Hering (Ann. Mag. Nat. Hist. 8, 1841, p. 91), which has been regarded as synonymous with *Gigartina fastigiata* J. Ag., applies to a species of *Dicurella*, viz., *D. scutellata* (Her.) Papenfuss (Bot. Not. 1840, p. 219).

Halosaccion ramentaceum (L.) J. Ag. This species was recorded from South Africa by Barton (Journ. Bot. 1893, pp. 141, 206). An examination of the specimen (in Herb. Mus. Brit.) upon which the record is founded has shown that it is *Halosaccion ramentaceum.* It is extremely doubtful, however, that this specimen actually was collected in South Africa and it is suggested that *H. ramentaceum* be excluded from the flora of South Africa. The species is at home in the colder waters of the North Atlantic and North Pacific.

Pterosiphonia cloiophylla (Ag.) Falkenberg, *in* Schmitz, Flora, 72 : 448, 1889 ; Rhodomelaceen : 271, 1901. *Rhodomela cloiophylla* C. Agardh, Sp. alg., 1(2) : 375, 1822. *Polysiphonia acanthina* J. Agardh, Sp. alg., 2(3) : 936, 1863. *Pterosiphonia acanthina* (J. Ag.) Falkenberg, Rhodomelaceen : 275, 1901.

In *Pterosiphonia cloiophylla* the segments of the thallus form five pericentral cells and the disticho-alternate branches are separated by an interspace of two or more segments. As a synonym under this species must be included *Pterosiphonia acanthina* (J. Ag.) Falkenberg. According to Falkenberg (1901) *P. acanthina* has 8—12 pericentral cells, but in the type specimen (No. 39380 in Herb. Agardh) the segments contain but five pericentral cells. J. Agardh (1863) states that the species has five to six pericentral siphons. The type of *P. acanthina* is slenderer than typical *P. cloiophylla*, but comes within the wide range of variation of this species.

The writer has not had the opportunity of examining the material which Falkenberg referred to *P. acanthina*, but none of the known South African complanate species of *Pterosiphonia* contain eight or more pericentral cells.

As pointed out by Falkenberg (1901), *P. cloiophylla* is very closely related to *P. complanata* of the North Atlantic and Mediterranean and is retained as a separate species essentially owing to its different geographical distribution. Pending a comparative study of the two species, based on fixed material, it seems best to follow Falkenberg in retaining the South African plant as a distinct species.

Gymnothamnion elegans (Schousboe ex C. Ag.) J. Agardh, Anal. alg. : 27, pl. 1, figs. 11—14, 1892. *Callithamnion elegans* Schousboe ex

C. Agardh, Sp. alg., 2 : 162, 1828. *Plumaria Schousboei* (Bornet) Schmitz, Nuova Not., 7 : 7, 1896.

This widely distributed species is here recorded for the first time from South Africa. It was associated with *Bostrychia mixta* at East London (Shelly Beach) and at Oudekraal in the Cape Peninsula. The South African plants agree well with the type material (No. 18198 in Herb. Agardh).

Considerable confusion exists regarding the nomenclature of this species. J. Agardh (1892) founded the genus *Gymnothamnion* to receive *Callithamnion elegans* Schousb. ex C. Ag., but the majority of authors have followed Schmitz (1896) in referring the species to *Plumaria* (as *P. Schousboei*). The development of the procarp has not been studied in *G. elegans*,[5] but vegetatively the species is sufficiently distinct from *Plumaria* to justify its removal to a different genus.

Acrosorium deformatum (Suhr) comb. nov. *Nitophyllum deformatum* Suhr, Verhandl. Kaiserl. Leopold.-Carol. Akad. Naturf., 18, Suppl. 1 : 282, pl. 2, fig. 5, 1841. *Schizoglossum Bartlingianum* Kützing, Sp. alg. : 870, 1849 (with respect to syn. *N. deformatum* Suhr only). *Nitophyllum acrospermum* J. Agardh, Sp. alg., 2(2) : 655, 1852 (with respect to syn. *N. deformatum* Suhr and specimen of Suhr only).

An examination of some of Suhr's original material of *Nitophyllum deformatum* has shown that this name applies to a species of *Acrosorium* distinct from *Acrosorium acrospermum* (formerly *Nitophyllum acrospermum*) under which it was included as a doubtful synonym by J. Agardh (1852, p. 656), and where it has remained up to the present (cf. De Toni, Syll. Alg. 1900, p. 649).

The writer has seen three sets of Suhr's material of this species : two packets were received on loan from Herb. Berlin, and Herb. Agardh contains a mount under No. 30641. The source of the specimens in one of the packets in Herb. Berlin is given as " Kaffernküste " while those in the other packet as well as the mount in Herb. Agardh came from Algoa Bay. It is proposed to designate as lectotype the material in Herb. Berlin that is marked as coming from Algoa Bay. This packet contains the following notation : " Abgebildt in der bot. Zeitung für 1837 fig. 53." As far as the writer is aware, however, the plant was illustrated for the first time in the paper containing Suhr's (1841) description of the species.

The writer has also collected this plant at a number of localities along the east coast of South Africa. The species is small, measuring less than 5 mm. in height, and usually occurs as an epiphyte on a species of *Gelidium*.[6]

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[5] The diagram of the procarp given by Feldmann-Mazoyer (Rech. Céram. Méd. occ., 1940, p. 192) is not of *G. elegans* but of *Plumaria elegans* (Bonnem.) Schmitz.

Bostrychia simpliciuscula Harv. ex J. Agardh, Sp. alg., 2(3) : 854, 1863. *Bostrychia tenuis* Post f. *simpliciuscula* (Harv. ex J. Ag.) Post, Rev. Algol., 9 : 23, 1936.

This species was reported from South Africa by Post (1936) under the name *Bostrychia tenuis* f. *simpliciuscula.* The procedure whereby Post reduces the original species, *B. simpliciuscula*, to a form under a species, *B. tenuis*, described as new by her is, however, not in conformity with Article 56 of the International Rules of Botanical Nomenclature (1935).

Laurencia complanata (Suhr) Kützing, Sp. alg. : 857, 1849. *Chondria complanata* Suhr, *in* Krauss, Flora, 29 : 211, 1846.

An examination of one of Krauss' original specimens (in Herb. Inst. allg. Bot. Hamburg) of *Chondria complanata* Suhr has shown that this binomial applies to the South African plant that has passed for a long time under the name *Laurencia concinna.* Kützing, without apparently having seen the species, in 1849 transferred *Chondria complanata* to the genus *Laurencia.* The plant is not uncommon along the east coast of South Africa.

Yamada (Univ. Calif. Publ. Bot. 16(7), 1931) does not refer to *Laurencia complanata* but considers *L. concinna* Montagne (Prod. Gen. Sp. Phyc. 1842, p. 6) as being synonymous with *L. Brongniartii* J. Agardh (Linnaea, 1841, p. 20). The type specimen of *L. Brongniartii* is hardly complanate in the dried condition and suggests a species entirely distinct from *L. complanata. L. concinna,* on the other hand, is complanate, but Yamada's (1931) description and photo of the type of this plant indicate that it also is distinct from *L. complanata.*

Laurencia pumila (Grun.) comb. nov. *Laurencia flexuosa* Kütz. var. *pumila* Grunow, Algae Novara : 87, 1867.

The writer knows this plant from the type[7] as well as from his own material, collected at a number of localities along the east coast of South Africa. Grunow described it as a variety, var. *pumila*, under *Laurencia flexuosa.* It seems best, however, to elevate var. *pumila* to specific rank since the only apparent feature that it has in common with *L. flexuosa* is that both are somewhat complanate. *L. pumila* is a small plant, seldom attaining a height of more than 5 cm., while *L. flexuosa* frequently attains a height of 20 cm. or more.

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[6] This species has been referred to *Gelidium corneum* by some authors and to *G. rigidum* (now *Gelidiella acerosa*) by others, but the writer is still uncertain of its identity.

[7] The specimen is in Diesing's collection in Herb. Naturhist. Mus. Vienna. Grunow credits Gueinzius as the collector of the specimen, but according to the label it was collected by Pöppig. In his account of the algae of the Novara Expedition, Grunow erroneously gave the name of Gueinzius instead of that of Pöppig as the collector of several South African algae.

Acanthophora orientalis J. Agardh, Sp. alg., 2(3): 820, 1863. The record of this species is based on four specimens (in Herb. Mus. Brit.) that were collected by Bowerbank in Algoa Bay. Barton (Journ. Bot. 1893, p. 174) referred these specimens to *Acanthophora muscoides*, but as the plants lack spines on the main branches they cannot be assigned to this species. A comparison of the specimens with other species of *Acanthophora* has shown that they are representative of *A. orientalis*. This species has been reported fsom Zanzibar in East Africa and apparently has a wide distribution in the Indian Ocean.

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